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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NATNAEL, PAULOS M	
ART UNIT	**PAPER NUMBER**
2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/217,873	RAPAICH, MARK	
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This Office Action is in response to the Appeal Brief filed on March 31, 2002. The Final Rejection of October 23, 2002 has been withdrawn, so that the following issue would be addressed and prosecution would be complete. Therefore, the following action is a Non-Final action.

Claim Objections

2. Claims **5 and 10** are objected to under 37 CFR 1.75(d), as having no support in the disclosure or the specification to show the claims as recited.

While the specification discloses a non-linear input between voltage input and display output intensity in the CRT, and that most CRT have a gamma of about 2.5 requiring input voltage compensation by raising the input voltage to the power gamma to transform the uncorrected CRT response curve 201 (fig.2) into a perceived linear eye response curve also represented by curve 203 (fig.2), there is no disclosure in the specification to show the signal is "encoded with a correction factor that is compensated for in applying the corrective algorithm". In other words, nothing is encoded and the correction factor would be the result of CRT response curves 201 and 203 as shown in Fig.2. Hence, the claimed "wherein the digital YUV video signal is encoded with a correction factor that is compensated for in applying the corrective algorithm to the digital YUV signal" is mis-descriptive, and Applicant has no support for Claims 5 and 10 in the specification beyond the description of fig.2.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims **1 and 6** are rejected under 35 U.S.C. 102(e) as being anticipated by Aleksic, U.S. Pat. No. 6,020,921.

Considering claim **1**, Aleksic discloses all claimed subject matter, note;

A) the claimed video source capable of providing a digital YUV video signal is met by Frame buffer 1 and VIDEO IN (FIG 2), which "apply a YUV signal to a gamma correction circuit 3...." (col. 2, lines 64-65)

B) the claimed video output capable of connecting to a video display device is met by the output of D/A 9 to the CRT 11 (FIG.2).

C) the claimed digital processor computationally employing a corrective algorithm that applies gamma correction to the digital YUV signal provided by the video source and provides a corrected signal to the video output is met by gamma correction circuit 3 (FIG.2). (see also Figs. 3 and 4 which disclose gamma correction using straight line

approximation performed computationally; Figs. 3 and 4 being improvements of the prior art shown in Fig.2)

Considering claim **6**, Aleksic discloses all claimed subject matter, note;

a) the claimed process of receiving a YUV digital video signal is met by LIMIT Y 5 (FIG 2), which receives the YUV signal applied by VIDEO IN and FRAME BUFFER 1 that "apply a YUV signal to a gamma correction circuit 3...." (col. 2, lines 64-65)

b) the claimed process of computationally applying gamma correction to the digital YUV signal within a personal computer is met by the gamma correction circuit 3 (FIG.2). (see also Figs. 3 and 4 which disclose gamma correction using straight line approximation performed computationally; Figs. 3 and 4 being improvements of the prior art shown in Fig.2)

c) the claimed process of providing a corrected digital YUV signal to an output for connection to a display device is met by the output of gamma correction 3 to conversion circuit 9 (FIG.2). (see also rejection of claim 1)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims **2-3,5,7-8,10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic, U.S. Pat. No. 6,020,921.

Considering claim **2**, the claimed wherein the digital processor further employs a corrective algorithm that corrects at least one of color saturation correction, tint correction, brightness correction and contrast correction;

Regarding claim 2, Aleksic does not disclose employing correction algorithm correcting color saturation, tint, brightness or contrast. However, the Examiner takes official notice in that it is well known in the art for a processor in the CRT to employ an algorithm to correct the brightness of a display, and therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the system of Aleksic by providing a digital processor capable of employing a corrective algorithm to perform brightness or other color correction, in order for the display to have a better quality image is displayed on the display and making easier on the eye of the use to utilize the display device.

Considering claim **3**, the claimed software module for user configuration of the digital processor that corrects the digital YUV signal;

Regarding claim 3 Aleksic does not specifically disclose a software module. However, the Examiner takes Official Notice in that it is well known in the art to utilize a software so that the user would manipulate an input device such as a graphical user

interface to correct the YUV signal and, therefore, it would have been obvious to the skilled in the art to modify the system of Aleksic by providing it with a software module of system in order to make the system more efficient and easy to use for the operator by operating a graphical user interface or such other input device to manipulate the system for gamma correction.

Considering claim **5**, the claimed wherein the digital YUV video signal is encoded with a correction factor that is compensated for in applying the corrective algorithm to the digital YUV signal is met by the disclosure that "the gamma correction value 0.45, 1/1.8 and 1/1.4" is given as QUAL_GAMMA_SEL . (col. 5, lines 65 through col.6, line 35) (See also discussion in Cols. 3-5)

Considering claim **7**, see rejection of claim 2.

Considering claim **8**, see rejection of claim 3.

Considering claim **10**, see rejection of claim 5.

7. Claims **4 and 9** are again rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic et al., U.S. Pat. No. 6,020,921 in view of Margulis et al., U.S. Pat. No. 6,334,994.

Considering claim 4, Aleksic discloses all claimed subject matter, except for; wherein the video sources comprise multiple sources selected from the group consisting of MPEG, NTSC, CVD, CD.

Regarding a), Aleksic discloses a gamma correction circuit in a computer CRT display driving circuit. Aleksic does not show multiple video sources. However, Aleksic discloses a gamma correction circuit for multimedia, and Multimedia, by definition, includes computers, consumer electronics such as DVD,VCRs, and television receivers.

On the other hand, Margulis et al. discloses a system and method for using temporal gamma and reverse super-resolution to process images for use in digital display systems. Margulis teaches that "image data input to system 200, which can be one or more of analog video, digital video, non-tuned data, graphics data or compressed data." (col. 6, lines 49-55) And "a System microcontroller (not shown) preferably uses user-selected input controls to select image data, which is appropriately processed by each of modules 302,304,and 312." (col. 7, lines 4-8)

Margulis et al. specifically discloses Color and Spatial gamma correction 410 and temporal gamma processor 412 (FIG.4). (See also col. 13, lines 44-64) Margulis teaches that "MPEG-2 can be applied to both standard definition television (SDTV) and high definition television (HDTV)." (Col. 3, lines 40-45)

Therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the gamma correction circuit 3 of Aleksic with the gamma correction circuits within the Display Input Processor (DIP) 210 or Display Output

Processor (DOP) 230 of Margulis with different video sources including MPEG-2 for digital video that can be applied to both SDTV (or NTSC) and HDTV, in order to make the system of Aleksic more versatile and efficient.

Considering claim **9,** see rejection of claim 4.

8. Claim **11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic et al., U.S. Pat. No. 6,020,921 in view of Warren et al., U.S. Pat. No. 6,304,300.

Considering claim **11,** Aleksic et al. disclose the following claimed subject matter, note
B) the claimed video source capable of providing a digital YUV video signal is met by Frame buffer 1 and VIDEO IN (FIG 2), which "apply a YUV signal to a gamma correction circuit 3...." (col. 2, lines 64-65)
C) the claimed video output capable of connecting to a video display device is met by the output of D/A 9 to the CRT 11 (FIG.2).
D) the claimed digital processor employing a corrective algorithm that applies gamma correction to the digital YUV signal provided by the video source and provides a corrected signal to the video output is met by gamma correction circuit 3 (FIG.2). (See also disclosure of a software-implemented embodiment on col.5, lines 57-67 to col.6, lines 1-35)

Except for;

A) the claimed personal computer system comprising a processor, a bus, a main memory, a system controller, and graphics controller.

Regarding a), Aleksic et al. does not disclose the listed items. However these items are well known in the art of any personal computer (PC) systems. A PC would not function as a computer without a processor, memory or graphics controller. In that regard, Warren et al. discloses a floating point gamma correction method and system in which Warren illustrates a block diagram (FIG.8) of a computer graphics system [which is exemplary only in that the invention can operate within a number of different computer system configurations] within which the invention may be implemented or practiced. (Col. 9. Lines 50- 60) Warren's computer graphics system (FIG.8) includes, inter alia, a processor, a bus, a main memory, a graphics subsystem.

Accordingly, therefore, it would have been obvious to one of ordinary skill in the art to add Warren's teachings of the computer graphics system within which the gamma correction would be implemented in the system of Aleksic et al. in view of their related performance and the resulting expectation of similar gamma corrected output.

Response to Arguments

6. Applicant's arguments filed on March 31, 2003 have been fully considered but they are not persuasive.

Applicant's Arguments

a) In contrast, the present invention utilizes and claims a digital processor employing a corrective algorithm that applies gamma correction to a digital YUV signal. That is, the present invention does not utilize a lookup table or switch between circuitry employing straight-line approximations of a gamma correction curve as are discussed in Aleksic, but instead utilizes a digital processor to computationally apply a corrective algorithm to the digital YUV signal to perform gamma correction.

Although the present invention may therefore use a lookup table in some embodiments of the present invention not explicitly recited in the claims, it still does so only in the context of performing a computational calculation in a digital processor, which is recited in the claims and is lacking from the cited Aleksic reference. Because the present invention does not simply use a lookup table to perform gamma correction, but employs computational calculation in a digital signal processor to perform gamma correction whether aided by a look-up table or not, Aleksic's mere recitation of a lookup tale does not anticipate the present invention. As the cited reference fails to teach the element of the digital processor employing a corrective algorithm via computational calculation, applicant believes that claims 1 and 6, and the claims that depend therefrom, are in condition for allowance.

b) Margulis is relied upon to show that MPEG, NTSC, and certain other video formats are desired to be handled in digital display systems. Aleksic, and its differences from

the present invention, are discussed in detail above in reference to the 102 rejection, and that discussion is hereby incorporated by reference.

c) Because claim 11 recites a "digital processor that computationally applies gamma correction via computational calculation to the digital YUV signal", which has previously been shown to be lacking in the Aleksic reference here used to anticipate such a digital processor, this claim is further believed to be in condition for allowance.

Examiner's Response

A) First of all, the claims do NOT recite avoiding the use of Look-up Table, and therefore, Applicant is arguing something that is not in the claims. The lookup table argument and response arose from Applicants complaint that the invention does not use a lookup table when clearly the claims do NOT recite such an invention.

Second, Aleksic clearly states the following: "The present invention provides a means to avoid using a lookup table, thus reducing the cost of the computer and avoiding the time of accessing the lookup table." [emphasis added] (Col. 1, lines 49-51) Aleksic does that by improving on Fig.2 of the prior art, i.e., Aleksic uses instead the disclosures in Fig.3 and Fig. 4.

Further, Aleksic discloses that "In the prior art, the gamma correction circuit is typically a lookup table, in which the Y signal input values are used as entries to a table, and corresponding output values stored with the various input values is returned, the

corresponding output values conforming to the solid curve shown in FIG.1." [emphasis added] (Col. 3, lines 8-13) Aleksic is clearly discussing the prior art, not his invention here. In col. 1, lines 37-39, again Aleksic is discussing the prior art. In col. 2, lines 64-65, there is no discussion of a look up table. Aleksic says "A video input line and frame buffer 1 apply a YUV signal to a gamma correction circuit 3, preferably through a y signal limiter 5." (Col. 2, lines 64-65) Thus, in col. 2, lines 64-65, there is no discussion whatsoever of a look up table.

Figs. 3 and 4 of Aleksic are clearly improvements upon prior art fig.2 of Aleksic. While Fig. 2 uses a lookup table, Figs. 3 and 4 use straight line approximations to three segment of the curve. Clearly, again, Figs. 3 and 4 use computations or calculations to process the transfer functions or the approximations to achieve the gamma correction.

Thirdly, the Gamma Correction processor is a digital processor, because it is processing the input signal in the digital domain, not analog.

Hence, the argument that the meaning of or the difference between computation and calculation is not persuasive, and the recited "computationally....a corrective algorithm via computational calculation" only makes the statement redundant.

b) As shown in the rejection above and argued in the last Office Action, in claims 4 and 9, the claimed "wherein the video sources comprise multiple sources selected from the group consisting of MPEG, NTSC, CVD, CD", is not met by the reference of Aleksic, but Aleksic discloses a gamma correction circuit for multimedia, in a computer CRT display driving circuit. Furthermore, the claims do not recite that the video sources are only

MPEG, NTSC, CVD and CD; instead, the claims recite that "the video sources comprise multiple sources selected from the group consisting of MPEG, NTSC, CVD, CD".

Margulis et al. discloses a system and method for using temporal gamma and reverse super-resolution to process images for use in digital display systems. Margulis teaches that "image data input to system 200, which can be one or more of analog video, digital video, non-tuned data, graphics data or compressed data." (col. 6, lines 49-55) And "a System microcontroller (not shown) preferably uses user-selected input controls to select image data, which is appropriately processed by each of modules 302,304,and 312." (col. 7, lines 4-8)

Margulis et al. specifically discloses Color and Spatial gamma correction 410 and temporal gamma processor 412 (FIG.4). (See also col. 13, lines 44-64) Margulis teaches that "MPEG-2 can be applied to both standard definition television (SDTV) and high definition television (HDTV)." (Col. 3, lines 40-45)

Therefore, argument that the multiple sources are not shown is unpersuasive.

c) Claim 11 recites a "digital processor that computationally applies gamma correction via computational calculation to the digital YUV signal" is redundant. And because this language has been rejected in claim 1, and the rest of claim 11 has been rejected as obvious. And, the recited list of items (a processor, bus, main memory, system controller, graphics controller) are typical items found in a typical personal computer. Argument therefore is unpersuasive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 6:30am -3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.

Paulos Natnael
June 22, 2003

JOHN MILLER
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